

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

RA

U/R

OK P16/1/6

Page 1

Item ID: D119-646-043

Accept

N900040100

Setup Start

NS1

Revision ID: URF15-560

Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Stop

NS2

Start Date: 12/14/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 1/4/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan:



Date: 16-01-04

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D3905-041

D

IIN-D119-646

C

100

0.00

100

DC

0.00

Doc.Control -USB or Paperwork

Memo

Photocopy bluefile & type labels per PPP D119-646-043
CHG 004N/A 

u LSI 9734 !

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐						
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval		
Description Work Order Deviation					Disposition					
										Completed By
										Lead hand / Supervisor Approval Verification
										QC / QA Coordinator Approval
Root Cause					FAULT CATEGORY					
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐					
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐					
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐					
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐					
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐					
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐					
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐					
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐					
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐					
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐					
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :								
Misidentified ☐	Past Due ☐									

Work Order ID 140454***140454***

Monday, January 04, 2016 2:10:31 PM

Page 2

Item ID: D119-646-043

Accept

N900040100Setup Start ***NS1***

Revision ID: URF15-560

Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Stop ***NS2***

Start Date: 12/14/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 1/4/2016 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

110

0.00

110

Skidtubes

Skidtubes

Memo

0.00

1- Bend FWD end of tube using Bender 1 and bend prog D3905 FWD per dwg D3905

2- Cut FWD end of tube as per dwg D3905.

3- Cut AFT end of tube as per dwg D3905.

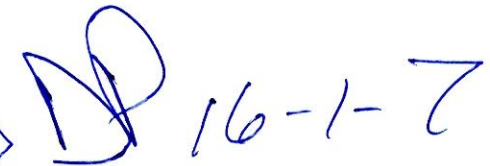
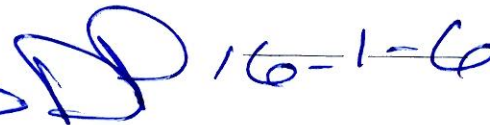
4- Buff out marks left from bending

5 -Install drill Jig DT9480 drill X-bolt spacer pilot holes using 3/16" drill first side only.

6- 2nd side, locating from first saddle holes use DT9861 A/B to drill 2nd side fwd saddle holes.

7- 2nd side locating from fwd saddle drill remaining crossbolt spacer holes using DT9480

8- Drill FWD cap holes using DT8215.



DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation		Disposition			
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
		OTHER : ☐			

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 3

Item ID: D119-646-043

Accept

N900040100Setup Start ***NS1***

Revision ID: URF15-560

Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Stop ***NS2***Start Date: 12/14/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 1/4/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	Chemical Conversion Coat per QSI005 4.1	0.00							
120									
HandFinish	Memo	0.00							
Hand Finishing									
130	QC7-Inspect Chemical Conversion Coat	0.00							
130									
QC	Memo	0.00							
Quality Control									
140	QC5- Inspect part completeness to step on W/O	0.00							
140									
QC	Memo	0.00							
Quality Control									

DAS
18
9-89

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :			MRB (QSI042) Approval
Description Work Order Deviation		Disposition			Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 4

Item ID: D119-646-043

Accept

N900040100Setup Start ***NS1***

Revision ID: URF15-560

Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Stop ***NS2***Start Date: 12/14/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 1/4/2016 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

170

0.00

170

Skidtubes

Skidtubes

Memo

0.00

Open FWD Saddle holes to finish size as per dwg and deburr

1-Bond web in place as per Dwg D3905 & QSI 015. (at 42.95" ref.)

A/RSikaflex-291 133427Sikaflex expire date: 16-2-12Start: 2 PM Time: 16-1-7

Finish: _____ Time: _____

***** (Adhere for 12 hours) *****

2--Bend AFT end of tube using CNC Bender 1 and bend prog. D3905 AFT as per dwg D3905. Install drop pins in crossbolt spacer holes to maintain web position.

3- Drill 1.87" and 3.74 holes using DT10045 A&B locate from FWD saddle hole. (verify measurement) as per dwg.

4- Drill Tow ring hole using DT9494. Open to finished size. ✓

5- Open FWD & AFT cap holes per dwg. Countersink Fwd cap only as per detail "C" ✓

6-Open crossbolt spacer holes to finished size. Drill most Fwd wearplate holes using DT9816 (15.21") ✓

7-Deburr crossbolt spacer holes as per Dwg D3905 and blow out chips from inside the tube ✓

8- Deburr

Drill holes for wearpads using DT9613 & DT9545 open to 0.207" Deburr

15.01.18

16-1-11

16-1-12

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐		
Date : <u>16/1/19</u>	Step #: <u>170</u>	QTY Effective :	MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		DAS 12 0.89 16/1/19 Completed By <u>BE</u> 16-02-08 Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval
<u>3 wearplate pilot holes were dr drilled in wrong location. wrong tool</u>		<u>Acceptable to fill (3) pilot holes with weld and grind flush.</u> <u>ICA-D119-646 elbows weld repairs in affected region <u>A/R m133816</u></u>		
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		
OTHER : _____				

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 5

Item ID: D119-646-043 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH
Start Date: 12/14/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/4/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

9- Buff out marks left from bending.

10- Pilot drill and Open holes of section G using DT9493 open to finished size.
*****VERIFY DIMENSIONS*****

11- Countersink crossbolt spacer holes, and prepare tube for welding, deburr.

180

180

QC

Quality Control

QC5- Inspect part completeness to step on W/O 0.00

Memo 0.00

DAS
18
9-89
DAS
718
9-89

1 0 16-02-08

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																													
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																									
Description Work Order Deviation				Disposition																																																													
Root Cause		FAULT CATEGORY																																																															
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____			
Misidentified ☐	Past Due ☐																																																																

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 6

Item ID: D119-646-043 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH
Start Date: 12/14/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/4/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190		0.00							
190 Skidtubes	Memo NOTE:TACK IN 2 MOST FWD X-BOLT SPACERS AND TEST FIT FWD GROUND HANDELING FIXTURE,IF FIXTURE FITS WELL THEN PROCEED. FIXTURE DT10091.	0.00							
Skidtubes	1-Insert crossbolt spacers. Weld as per QSI004 and Dwg D3905. Remember to back drill each hole before welding the other side. Use aluminum rod A/RAluminum Rod <u>m1338/6</u>								
	2-Grind cross bolt welds flush as per Dwg D3905. Ensure no pin hole.								
	3-Counterbore 5/16" x 0.750" deep as per Dwg D3905.								
	4- Deburr & Scribe batch # on Aft end of tube.								
200	QC5- Inspect part completeness to step on W/O	0.00							
200 QC	Memo TEST FIT USING FIXTURE DT10091.	0.00							
Quality Control									

BE16-02-08
16-2-9
1

DAS
38
8-89

FEB 10 2016

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 7

Item ID: D119-646-043 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH
Start Date: 12/14/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/4/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC10- Inspect visual per QSI004- ground welds	0.00							DAS 38 9-89
210									
QC	Memo	0.00							
Quality Control									FEB 10 2016
220	Pressure Wash per QSI005 4.3	0.00							DAS 34 9-89
220									
HandFinish	Memo	0.00							
Hand Finishing	Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.								10 16-04-5
230		0.00							DAS 41 9-89
230									
SprayPaint	Memo	0.00							
Spray Painting	PRIME AS PER DWG AND QSI 005 4.2 BATCH: <u>137195</u>								
	PAINT WHITE AS PER DWG AND QSI 005 4.2 BATCH: <u>138396</u>								

SEE Attached

DST 9734 JW 17-08-30
① 2017-08-30
BEB

SEP 14 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval 	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 8

Item ID: D119-646-043 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH
Start Date: 12/14/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/4/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	QC14- Inspect Spray Paint	0.00							
240									
QC	Memo	0.00							
Quality Control									
250		0.00							
250									
HandFinish	Memo	0.00							
Hand Finishing	1-Install inserts as per Dwg D3905.								
260	QC5- Inspect part completeness to step on W/O	0.00							
260									
QC	Memo	0.00							
Quality Control									

DAS
15
89S
1/10/19

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :			MRB (QSI042) Approval
Description Work Order Deviation		Disposition			Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
		OTHER : ☐			

Work Order ID 140454***140454***

Monday, January 04, 2016 2:10:31 PM

Page 9

Item ID: D119-646-043 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF15-560 Stop ***NS2***
Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH
Start Date: 12/14/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 1/4/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270		0.00							
270 HandFinish Hand Finishing	 <i>SEE Attached</i>	Memo 0.00 1-Install wearpads, gaskets and wearplates as per Dwg D3905. Put sikaflex in insert before installing bolts and washers A/RSikaflex-240/-291 <u>M138535</u> Sikaflex expire date: <u>1910</u> 2-assemble o'ring to plug as per dwg D3492 and apply o'ring lube A/R 55-o'ring lube batch: <u>M1135477</u> 3 -Inspect for foreign objects as per QSI 024 4 -Install Aft Cap and seal with Sikaflex. Clean excess adhesive. A/RSikaflex-240/-291 <u>M138535</u> Sikaflex expire date: <u>1910</u> 5- Install D5101-041 as per dwg by using DT10117							<i>IRH f JH Hodge</i>
280	QC5- Inspect part completeness to step on W/O	0.00							
280 QC Quality Control	Memo 0.00								

DAS
19
9-00*10* SEP 2 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence					
				☐ OTHER : _____					

140454

Monday, January 04, 2016 2:10:31 PM

Page 10

Item ID: D119-646-043

Accept

N9000401 00

Setup Start

NS1

Revision ID: URF15-560

Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Stop *NS2*

Start Date: 12/14/2015 **Start Qty:** 1.00

*** 1 ***

Cust Item ID:

Required Date: 1/4/2016 **Req'd Qty:** 1.00

*** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
 QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
285	Wing Walk as per dwg QSI005 4.4 Batch	111379407							
285	HandFinish					1RH	d	22	12/08/14
Hand Finishing	Memo	0.00							

286	QC3- Inspect Part Finish	0.00
286		
QC	Memo	0.00
Quality Control		

10 SEP 21 2017 DAS 9 0:00

290	Identify as per dwg & Stock Location	W/o	0.00
290			
Packaging	Memo		0.00
Packaging		165018	

IX 17/09/2020

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Work Order ID 140454

Monday, January 04, 2016 2:10:31 PM

140454

Page 11

Item ID: D119-646-043 **Accept** ***N900040100*** **Setup Start *NS1***
Revision ID: URF15-560 **Stop *NS2***
Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH
Start Date: 12/14/2015 **Start Qty:** 1.00 ***1*** **Cust Item ID:**
Required Date: 1/4/2016 **Req'd Qty:** 1.00 ***1*** **Customer:**
Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start *NR1***
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop *NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
300	QC21- Final Inspection - Work Order Release	0.00							
300									
QC	Memo	0.00							
Quality Control									

DAS
21
9-89
SEP 22 2017

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QS1042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Picklist Print

Monday, January 04, 2016 2:10:29 PM

Page 1

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

Comments: IPP RevA: New issue DD verified by:EC
10.02.22 per PAR 09-043 EC verified by:DD IPP revB
(DEOD3905-B-1)(ecn 12-675) DD verf:JLM IPP REV:D 12.11.05
chg003 ECN13-534 DD verf:JLM
IPP REV:E 15.01.19 AS PER ECN-14-628 DD verf:JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
AN4C46A		Purchased	No			270	Each	278.0000	3	3			

AN4C46A

Bolt

**

all 12/04/19

Location

Loc Qty

Loc Code

FG
123642
m132169
OVER002
m131856
m133332
m133916
ST341
m129431

8
2
6
210
70
70
70
60
60

1137316

x3

D3847-043

Manufactured No

D3847-043

Wearplate Fwd

**

all 12/04/19

Location

Loc Qty

Loc Code

FP002
136770

3
3

11136505

x1

D3847-045

Manufactured No

D3847-045

Wearplate Center

**

all 12/04/19

Location

Loc Qty

Loc Code

FP002
136771

4
4

0166183

x1

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 2

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

D3847-049

Manufactured No

Each

4.0000

Start Qty: 1.00

Required Qty: 1.00

1

D3847-049

Aft Wearplate Assembly, Float Gear

**

all 12/14/15

Location

Loc Qty

Loc Code

FP002

4

B139350

136773

4

D5101-041

Manufactured No

270

Each

23.0000

3

D5101-041

Crossbolt Spacer Assembly

**

*x1
x2*

Location

Loc Qty

Loc Code

FP001

2

B140121

139261

2

x2

ST152

21

137417

21

D5101-3

Manufactured No

270

Each

44.0000

6

D5101-3

Insert

**

all 12/09/14

Location

Loc Qty

Loc Code

FP001

2

B154094

135947

2

x6

st151

42

127964

42

D5101-5

Manufactured No

270

Each

57.0000

6

D5101-5

Insert

**

all 12/04/13

Location

Loc Qty

Loc Code

FP001

18

B158796

135948

18

x6

st151

39

127965

39

Monday, January 04, 2016 2:10:30 PM

Shop Packet Print

Page 2

X D5101-047 / B164593 (all) all 12/04/13

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition					
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 3

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

MS21043-4

Purchased

No

270

Each

Start Qty: 1.00
1,230.000 3 3

Required Qty: 1.00

MS21043-4

Nut

**

all blocks

Location

Loc Qty

Loc Code

CCK007

800

1113788 G

X3

m133769

800

FG

40

104603

40

GA

22

m128798

22

ST302

368

m132803

300

m133316

68

D2500-1-190

Manufactured

No

110

Each

37.0000

1

D2500-1-190

Ext'n -I' Beam Tube 4"

**

16-1-6

Location

Loc Qty

Loc Code

HALL

37

134259

37

Each

37.0000

2

D2579

Manufactured

No

D2579

Crossbolt Spacer

**

BB160208

Location

Loc Qty

Loc Code

LG001

37

123997

37

a

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 4

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

D2855-3

Manufactured No

270

Each

61.0000

Start Qty: 1.00

2

2

Required Qty: 1.00

D2855-3

Cap

all 12/09/14

Location

Loc Qty

Loc Code

FP001

61

B153291

135830

11

x2

137525

50

D3492-5

Manufactured No

270

Each

48.0000

16

16

D3492-5

Plug

all 12/09/14

Location

Loc Qty

Loc Code

FP001

48

B164331

133396

8

x16

136396

6

138198

34

NAS1611-005

Purchased No

270

Each

471.0000

16

16

NAS1611-005

O-RING

all 12/09/14

Location

Loc Qty

Loc Code

FP001

471

11137769

m129198

11

x16

m133498

460

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 5

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

D3672-1

Manufactured No

270

Each

686.0000

Start Qty: 1.00

2

2

Required Qty: 1.00

D3672-1

Washer, Phenolic

**

all 12/04/16

Location

Loc Qty

Loc Code

FG

10

M150074

85222

10

x2

ST049

176

112218

72

127322

104

ST051A

500

134785

500

D3681-1

Manufactured No

190

Each

105.0000

8

8

D3681-1

Spacer

**

BB16-02-08

Location

Loc Qty

Loc Code

LG001

105

138818

32

139031

32

139615

41

8

D3847-1

Manufactured No

270

Each

15.0000

8

8

D3847-1

Wearpad

**

all 12/09/19

Location

Loc Qty

Loc Code

FP001

15

135979

5

137705

10

B163718

x2

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 6

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

D3847-11

Manufactured No

270

Each

3.0000

Start Qty: 1.00

1

1

Required Qty: 1.00

D3847-11

Wearpad

**

all 12/10/15

Location

Loc Qty

Loc Code

FP001

3

B159114

135077

1

138418

2

D3885-3

Manufactured No

170

Each

2.0000

1

D3885-3

Standard Web

**

16-1-11

Location

Loc Qty

Loc Code

LG002

2

135288

2

D3903-1

Manufactured No

190

Each

38.0000

12

12

D3903-1

Spacer

**

*BE/602-08
8140943 v11*

Location

Loc Qty

Loc Code

LG001

38

124312

3

136545

35

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐				
Date :	Step #:	QTY Effective :			MRB (QS1042) Approval	
Description Work Order Deviation		Disposition			Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐				
		OTHER : ☐				

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 7

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

D3672-3

Manufactured No

Each

Start Qty: 1.00
1,089.000

12

Required Qty: 1.00

D3672-3

Washer, Phenolic

2/16

Location

Loc Qty

Loc Code

FG

100

133083

52

134449

48

FP001

213

132639

213

ST049

276

137234

276

ST051A

500

139583

500

D3683-3

Purchased No

250

Each

227.0000

12

12

D3683-3

Insert

2/16

Location

Loc Qty

Loc Code

FP001

34

47805

34

ST051

193

47805

193

ALS4-1032-130

AELS4-1032-130 Purchased No

250

Each

2,218.000

42

42

ALS4-1032-130

Rivnut

2/16

Location

Loc Qty

Loc Code

FP001

2218

M133077

2218

M1137820

442

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QS1042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 8

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

AN3C5A

Purchased

No

270

Each

Start Qty: 1.00
1,203.000 44 44

Required Qty: 1.00

AN3C5A

Bolt

**

all 12/14/15

Location

Loc Qty

Loc Code

FG

5

M137963

x44

122800

5

FP001

474

M133234

54

M133769

420

OVER002

600

M133686

600

ST338a

124

M125388

35

m127290

3

M131803

42

M132640

44

Each

2,850.000

44

**

all 12/14/15

NAS1149C0332R

Purchased

No

NAS1149C0332R

WASHER

Location

Loc Qty

Loc Code

FP001

1547

m132262

4

m132930

1004

m133284

539

GA

331

m133284

331

ST266

972

m133284

972

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Picklist Print

Monday, January 04, 2016 2:10:30 PM

Page 9

Work Order ID: 140454

140454

Parent Item: D119-646-043

D119-646-043

Parent Item Name: Repl. Skidtube with Wearpads, DART (Apical) Tri-Bag Float Compatible, Fits LH/RH

Start Date: 12/14/2015

Required Date: 1/4/2016

NAS1149C0463R

Purchased

No

Each

241.0000

Start Qty: 1.00

12

Required Qty: 1.00

NAS1149C0463R

Washer

**

12/16

Location

Loc Qty

Loc Code

FP001

72

m127306

72

ST271

169

m128401

69

m133077

100

MS27039C4-08

Purchased

No

270

Each

264.0000

12

12

MS27039C4-08

SCREW

**

12/16

Location

Loc Qty

Loc Code

FP001

20

m126319

20

ST276

244

m126319

144

m128429

100

MS24694-C52

Purchased

No

Each

127.0000

2

MS24694-C52

SCREW

**

12/16 12/16/14

Location

Loc Qty

Loc Code

FP001

17

m127059

17

ST287

10

124308

10

ST346

100

m133855

100

* NAS1149C0463R / 11/13/511 (X6) 12/16/14

Monday, January 04, 2016 2:10:30 PM

Shop Packet Print

Page 9

DQA: _____ Date: _____

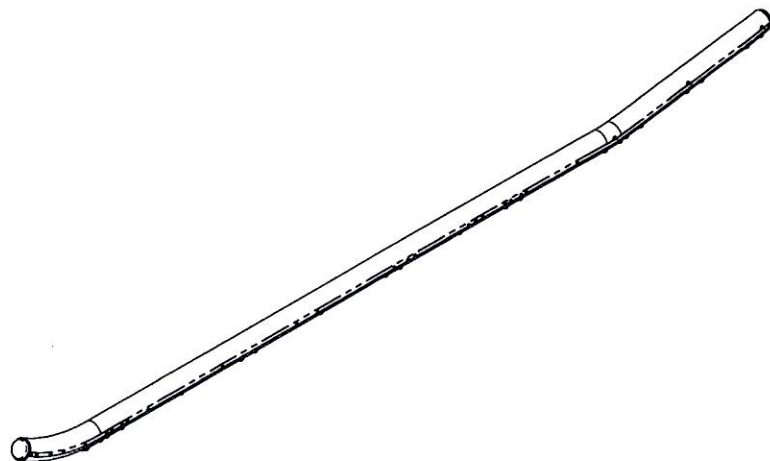


WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐							
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____			
Description Work Order Deviation				Disposition							
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due		☐ Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter		FAULT CATEGORY ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes		☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center		☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence	
				☐ OTHER : _____							



D3905-041 FLOAT SKIDTUBE ASSY WITH WEARPAD (SHOWN)
D3905-043 FLOAT SKIDTUBE ASSY WITH WEARPLATE (SIMILAR)
D3905-045 FLOAT SKIDTUBE ASSY WITH TRAINING WEARPLATE (SIMILAR)

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIOR TO INSERTING D3885-3 FLOAT WEB PRIME (REF. 4.2.1.3.3) AND PAINT WHITE PER DART QSI 005 4.2 BLACK ANTI-SKID PAINT AS INDICATED TO 0.5 ABOVE LOCATION RIDGE PER DART QSI 005 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: D3905-041 = 35.4 lbs
D3905-043 = 42.8 lbs
D3905-045 = 48.0 lbs
- 8) WELD PER DART QSI 004
- 9) DAMAGE TOLERANCE ON FWD BEND: THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 8.5 INCHES ABOVE THE GROUND. IT IS ACCEPTABLE TO POLISH OUT GOUGES UP TO 0.020" DEEP IN THE BENT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
- 10) INSERT D3885-3 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH SIKAFLEX-241/291 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP
- 11) INSERT D3492-045 PLUG ASSY INTO $\phi 0.197$ HOLES (BOTH SIDES OF TUBE)
- 12) USE DART DRILL TEMPLATE DT8932 TO LOCATE AND DRILL $\phi 0.297$ HOLES FOR WEARPLATE INSERTS. INSTALL AELS-1032-130 INTO D3905-11 ONLY. INSTALL AN3C5A BOLTS AND NAS1149C0332R WASHERS WITH SIKAFLEX-241/291.

ITEM	QTY -041	QTY -043	QTY -045	P/N	DESCRIPTION
1	X			D3905-041	FLOAT SKIDTUBE ASSY WITH WEARPAD
2		X		D3905-043	FLOAT SKIDTUBE ASSY WITH WEARPLATE
3			X	D3905-045	FLOAT SKIDTUBE ASSY WITH TRAINING WEARPLATE
10	2	2	2	D2579	CROSS BOLT SPACER
11	2	2	2	D2855-3	CAP
12			16	D3411-3	WASHER
13	16	16		D3492-045	PLUG ASSY
14	2	2	2	D3672-1	PHENOLIC WASHER
15	8	8	8	D3681-1	SPACER
16	8	8	1	D3847-1	WEARPAD
17	1	1	1	D3847-11	WEARPAD
18		1		D3847-043	FWD WEARPLATE ASSY
19		1		D3847-045	CENTER WEARPLATE ASSY
20		1		D3847-049	AFT WEARPLATE ASSY
21			1	D3849-045	AFT WEARPLATE ASSY
22			1	D3849-047	FWD WEARPLATE ASSY
23	1	1	1	D3885-3	FLOAT WEB
24	12	12	12	D3903-1	SPACER
25			16	D3904-1	WASHER
26	1	1		D3905-11	FLOAT SKIDTUBE
27			1	D3905-13	FLOAT SKIDTUBE
28	6	6	6	D5101-3	INSERT
29	6	6	6	D5101-5	INSERT
30	3	3	3	D5101-041	CROSSBOLT SPACER ASSY
41	42	42	10	ALS4-1032-130	INSERT
42	44	44	12	AN3C5A	BOLT
43			4	AN3C46A	BOLT
44			4	AN3C50A	BOLT
45	3	3	3	AN4C46A	BOLT
46	44	44	8	NAS1149C0332R	WASHER (OR AN960C10L)
47	12	12	12	NAS1149C0463R	WASHER (OR AN960C416)
48	6	6	6	NAS1149D0416J	WASHER
49			8	MS21043-3	NUT
50	3	3	3	MS21043-4	NUT
51	2	2	2	MS24694-C52	SCREW

UNDER REVIEW

15.04.30 URF15-560 AP

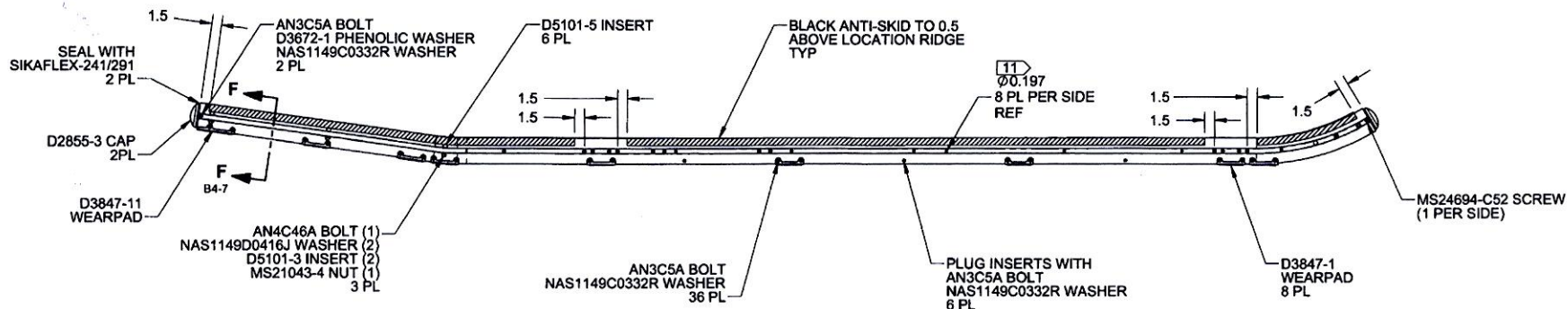
RELEASED

2014 NOV 24

ECN 14-628

D	REVISED DIMENSIONS AND PROVIDED TOLERANCE TO SKIDTUBE OVERALL LENGTH PAGE 5-6 REVISED NOTE 2 AND NOTE 7 PAGE 1 (ZN B8- ZN A8-1) REVISED -041/-043/-045 DRAWING VIEWS, REVISED SECTION VIEW F-F (ZN B4-7), REVISED BOM REF. PAR13-289 AND PAR13-272	AK	14.08.08
C	(SHT 1 P/L, ZN C2-2, C2-3, C2-4) ITEM 13, QTY 2 WAS 4, ITEM 42 AND 45, QTY 44 WAS 46, ADD ITEM 49, MS24694-C52 WAS AN3C5A, D3672-1 AND NAS1149C0332R, (ZN C7-7) $\phi 0.201$ CSK $\phi 0.385 \times 100'$ WAS $\phi 0.204$ THRU, (ZN A4-5, A4-6) ADD RELIEF INSTRUCTION, ADD ITEM 10, CROSS BOLT SPACER (ZN D4-1, C8-7, D8-7)	DB	13.02.21
B	REVISED PART LIST, ALS4-1032-130 WAS AELS-1032-130 (ZN A6-5, A5-6, C5-7, C3-7, A5-7); ADD DT8932 (ZN A8-1); D3885-3 WAS D2579 (ZN C1-3, C1-2, C8-3, C1-3, C8-4, C1-4); AN3C5A WAS AN3C4A (ZN C7-2, C1-2, C7-3, C1-3, C7-4, C1-4); D3849-047 WAS D3849-041 (ZN B3-4); ADD D3411-3 (ZN B3-4); ADD AN3C50A (ZN B3-4); $\phi 0.313$ WAS $\phi 0.328$ (B2-5, B2-6, C2-7, A8-7 & D7-8), REVISED NOTE 14 (ZN A8-7)	RF	09.06.30
D	NEW ISSUE	RF	09.03.30
REV.	DESCRIPTION	BY	DATE
DESIGN	ML	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	VS	DRAWING NO.	REV. D
MFG. APPR.	DD	D3905	SHEET 1 OF 8
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY	
DATE	14.08.08	NTS	

COPYRIGHT © 2009 BY DART AEROSPACE USA, INC.
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.



D3905-041 FLOAT SKIDTUBE ASSY WITH WEARPAD
(MAKE FROM D3905-11 SKIDTUBE)

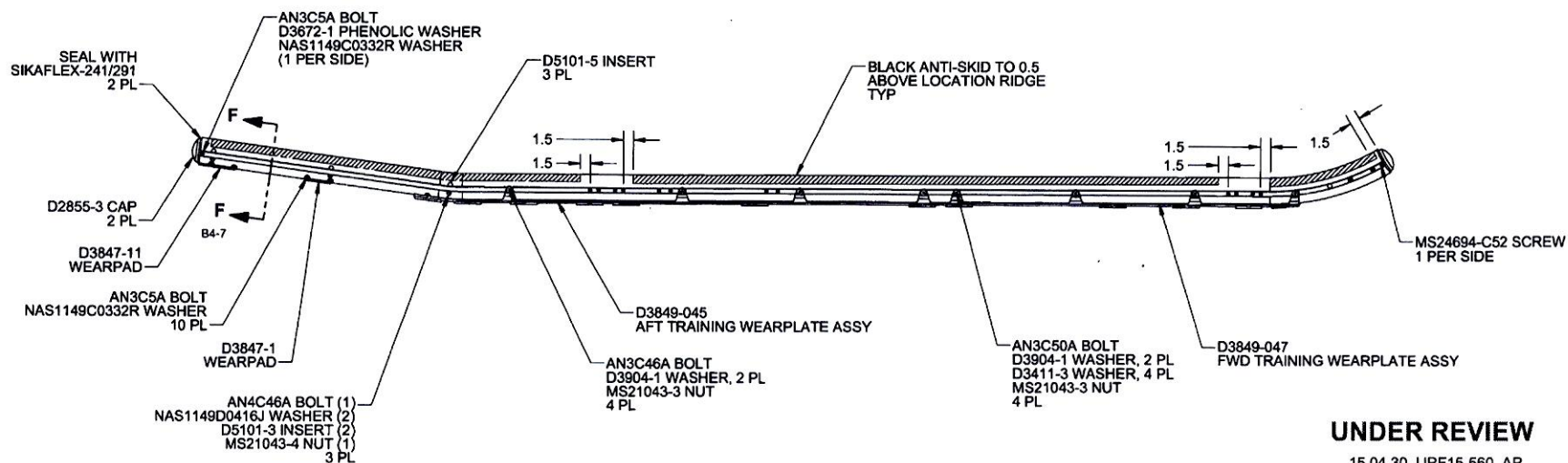
UNDER REVIEW

15.04.30 URF15-560 AP

RELEASED

2014 NOV 24

APPROVED	DESIGN	ML	DART AEROSPACE USA, INC.	
	DRAWN	RF	KENT, WA	
	CHECKED	VS	DRAWING NO.	REV. D
	MFG. APPR.	DD	D3905	SHEET 2 OF 8
	APPROVED	HS	TITLE	SCALE
	DE APPR.	D9	A119 FLOAT SKIDTUBE ASSY	NTS
DATE		14.08.08	COPYRIGHT © 2008 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



D3905-045 FLOAT SKIDTUBE ASSY WITH TRAINING WEARPLATE
(MAKE FROM D3905-13 SKIDTUBE)

UNDER REVIEW

15.04.30 URF15-560 AP

RELEASED

2014 NOV 24 *af*

APPROVED	DESIGN	ML	DART AEROSPACE USA, INC.	
	DRAWN	RF	KENT, WA	
	CHECKED	VS	DRAWING NO.	REV. D
	MFG. APPR.	DD	D3905	SHEET 4 OF 8
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY	NTS
	DATE	14.08.08	COPYRIGHT © 2008 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

8 7 6 5 4 3 2 1

D

D

C

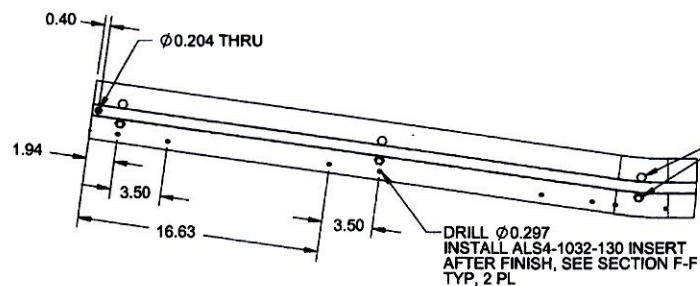
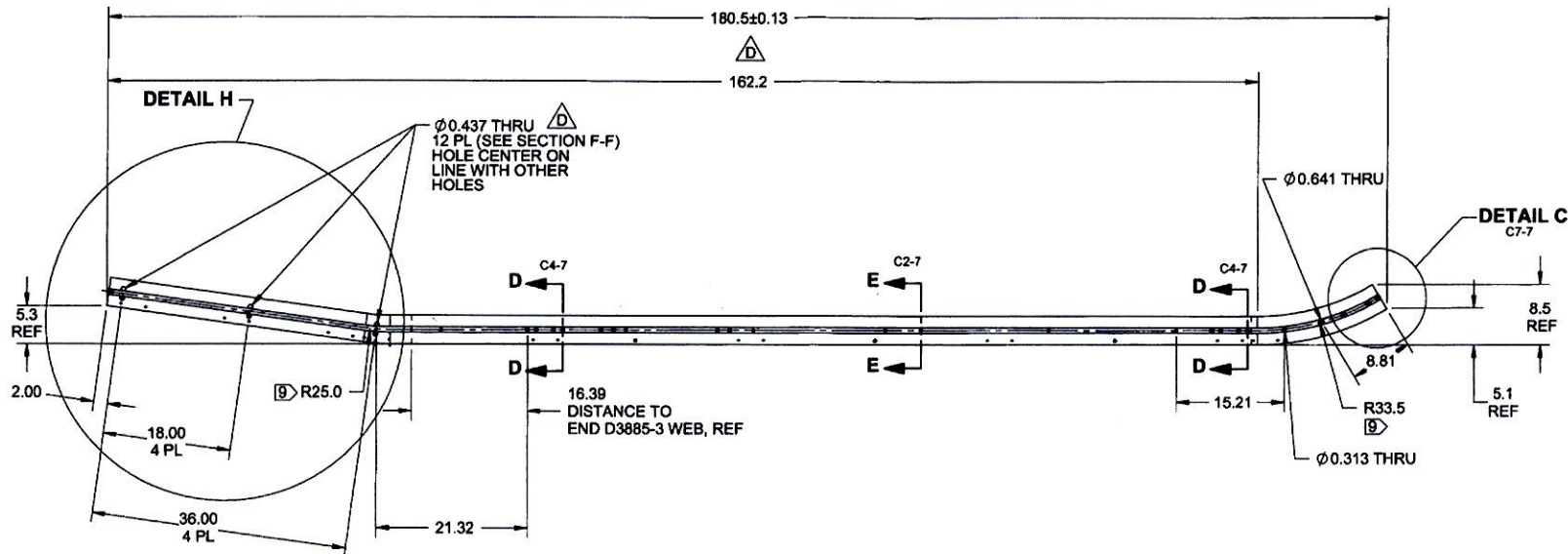
C

B

B

A

A



DETAIL H
SCALE 2X

D3905-11 FLOAT SKIDTUBE
(MAKE FROM D3905-1 TUBE)

RELIEVE RIDGE FLUSH WITH SKIDTUBE
FOR INSERT CLEARANCE
MAX 0.060 INTO THE RIDGE

DRILL Ø0.297
INSTALL ALS4-1032-130 INSERT
AFTER FINISH, SEE SECTION F-F
TYP, 2 PL

UNDER REVIEW

15.04.30 URF15-560 AP

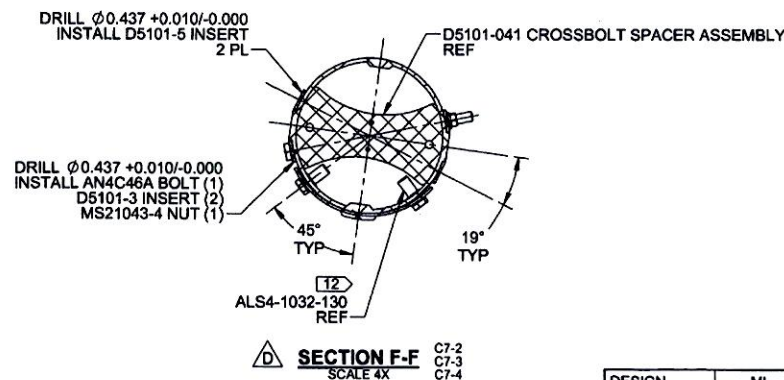
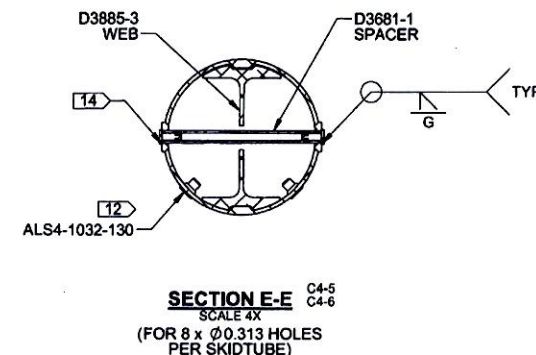
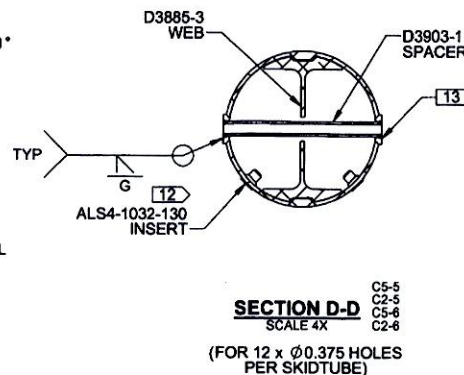
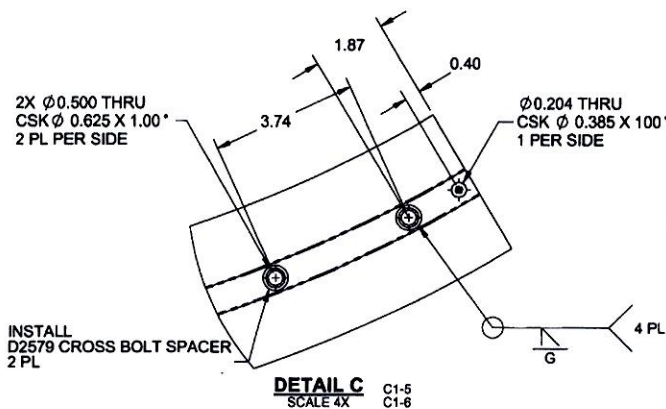
RELEASED

2014 NOV 24

APPROVED

DESIGN	ML	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	VS	DRAWING NO.	REV. D
MFG. APPR.	DD	D3905	SHEET 5 OF 8
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY	NTS
DATE	14.08.08	COPYRIGHT © 2009 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

8 7 6 5 4 3 2 1



- NOTES:**
- 13) AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.375 HOLES ONLY:
- CHAMFER HOLES Ø0.475 x 45° (BOTH SIDES)
 - INSERT D3903-1 SPACER
 - WELD INTO PLACE AND GRIND FLUSH
 - C'BORE TO 0.313 x 0.75 DEEP
 - DEBURR HOLES
- 14) AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR Ø0.313 HOLES ONLY:
- CHAMFER HOLES Ø0.354 x 45° OR 0.050 DEEP x 45° (BOTH SIDES)
 - INSERT D3681-1 SPACER
 - WELD INTO PLACE AND GRIND FLUSH
 - DEBURR HOLES

UNDER REVIEW

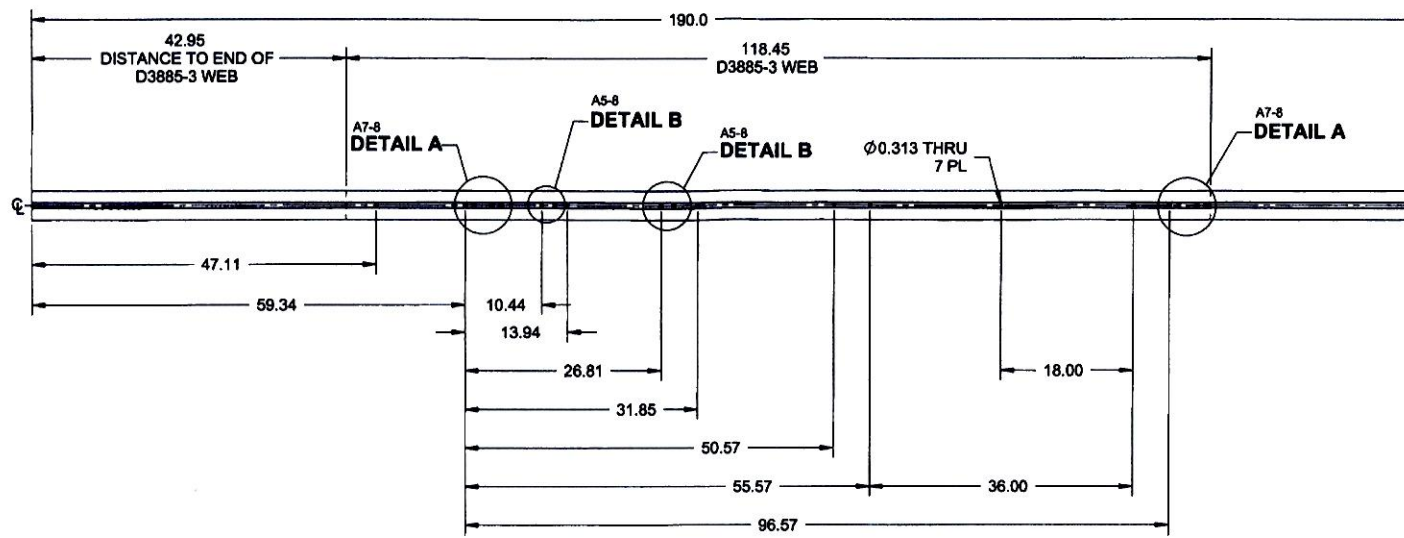
15.04.30 URF15-560 AP

RELEASED

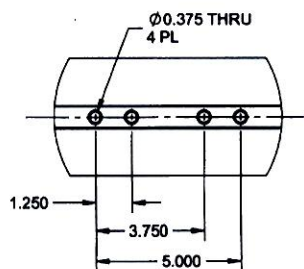
2014 NOV 24

APPROVED

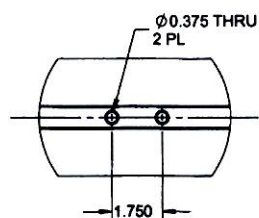
DESIGN	ML	DART AEROSPACE USA, INC.	
DRAWN	RF	KENT, WA	
CHECKED	VS	DRAWING NO.	REV. D
MFG. APPR.	DD	D3905	SHEET 7 OF 8
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY	NTS
DATE	14.08.08	COPYRIGHT © 2009 BY DART AEROSPACE USA, INC.	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.			



D3905-1 TUBE
(MAKE FROM D2500-1-190 EXTRUSION)



DETAIL A
SCALE 4X D6-8
D2-8



DETAIL B
SCALE 4X D5-8
D4-8

UNDER REVIEW

15.04.30 URF15-560 AP

RELEASED

2014 NOV 24

APPROVED	DESIGN	ML	DART AEROSPACE USA, INC.	
	DRAWN	RF	KENT, WA	
	CHECKED	VS	DRAWING NO.	REV. D
	MFG. APPR.	DD	D3905	SHEET 8 OF 8
	APPROVED	HS	TITLE	SCALE
	DE APPR.	DS	A119 FLOAT SKIDTUBE ASSY	NTS
	DATE	14.08.08	COPYRIGHT © 2009 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

DQA: _____ Date: _____

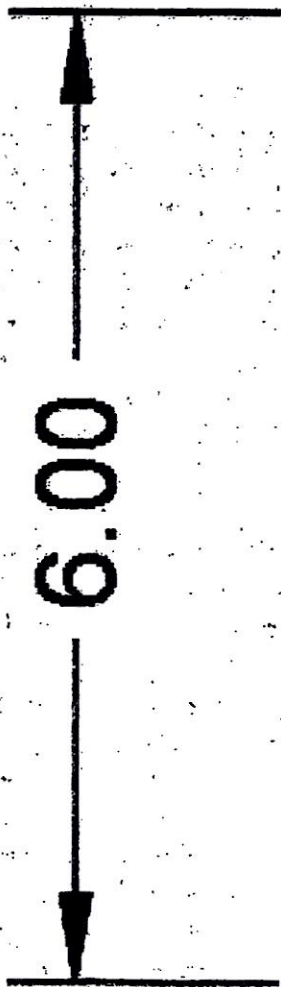


WORK ORDER NON-CONFORMANCE / UPDATE

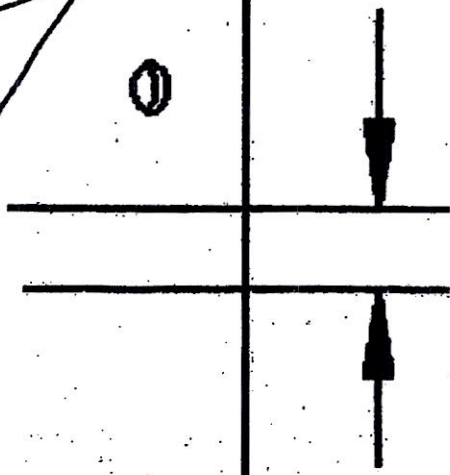
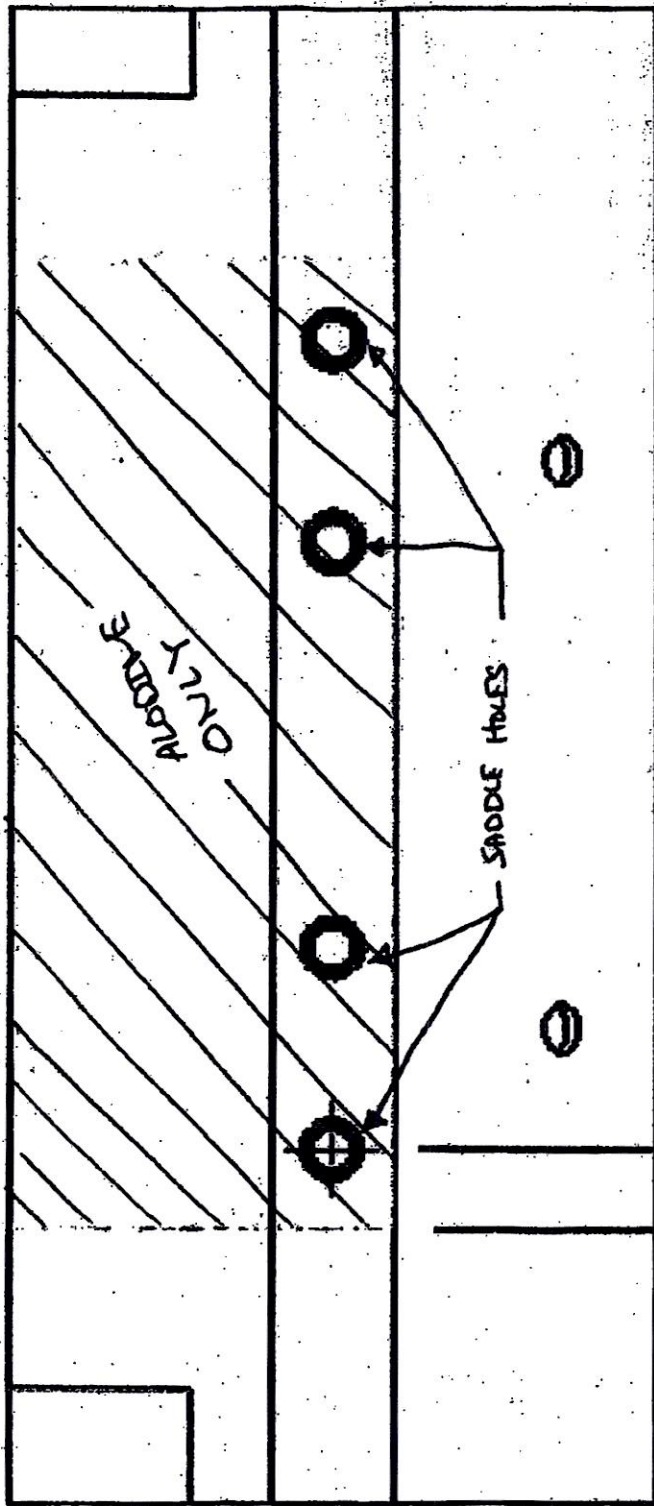
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>140454</u> Part No. <u>D119-646-043</u> NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☒ Quality ☐ Other ☐							
Date: <u>16/1/5</u>		Step #: <u>230</u>		QTY Effective: _____		MRB (QSI042) Approval <u>DAS</u> <u>12</u> <u>9-89</u>					
Description Work Order Deviation				Disposition		Completed By					
Do not paint saddle mating surface per customer request, glodine only.				Finish per attached dwg		<u>16/1/5</u>					
						Lead hand / Supervisor Approval Verification					
						QC / QA Coordinator Approval					
Root Cause				FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☒ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐		No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐		Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐		Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐		Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	
☒ OTHER: <u>Customer request.</u>											



A.P.
15.05.29



DART SERVICE INSTRUCTION

**TO AMEND INSTALLATION INSTRUCTIONS IIN-D119-646 REV. D
AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D119-646 REV. 3**
REF FAA STC: SR02024SE
REF EASA STC: 10040294

1.0 PURPOSE:

The purpose of this Dart Service Instructions is to add D119-646-313/-314 Skidtube Protector Kit to make the D119-646-011/-012/-041/-111/-112/-141/-211/-212/-241 Skidtube Kits and the D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 Float Skidtube Kits compatible with the 109-0812-68-105 Hoist Structural Provision Kit and the 109-0816-18-301 Rappelling Kit. The D119-646-313 Skidtube Protector, LH replaces the 109-B710-05-201 kit and the D119-646-314 Skidtube Protector, RH replaces the 109-B710-05-202 kit.

2.0 D119-646-011/-012/-041/-111/-112/-141 STANDARD SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 2.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 2.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 2.4 Countersink 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 2.5 Repeat steps 2.2 to 2.4 for the opposite side of the skidtube.
- 2.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 2.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

APPROVED

C	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR FLOAT SKIDTUBES D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243, REF CIR 17-101	VS	17.06.27
B	REVISED DSI TO INCLUDE INSTALLATION INSTRUCTIONS FOR SKIDTUBE ASSY D119-646-011/-012/-111/-112/-041/-141/-241 CHG 005 & SUBSEQUENT AND SKIDTUBE ASSY D119-646-211/-212 CHG 006 & SUBSEQUENT. ADDED NAS1149D0316J WASHERS TO BOM.	WK	17.02.16
A	NEW ISSUE	RF	15.12.10
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO. REV. C	
MFG. APPR.	N/A	DSI 9734 SHEET 1 OF 15	
APPROVED	HS	TITLE SCALE	
DE APPR.	DS	SKIDTUBE PROTECTOR KIT NTS	
DATE	17.06.27		
COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.			

3.0 D119-646-211/-212/-241 STANDARD SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-211/212 Skidtube at CHG 005 and prior, and D119-646-241 at CHG 004 and prior, to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 3.1 Temporarily remove D3849-043 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 3.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 3.4 Countersink 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 3.5 Repeat steps 3.2 to 3.4 for the opposite side of the skidtube.
- 3.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 3.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

D119-646-211/-212 Skidtube at CHG 006 and subsequent and D119-646-241 Skidtube at CHG 005 and subsequent, do not require modification. Discard D5376-1 Drilling jig and D5374-3 Bushings.

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 2 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



4.0 D119-646-013/-014/-043/-113/-114/-143 FLOAT SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-013/-014/-043/-113/-114/-143 Float Skidtube to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 4.1 Remove D3492-045 Plug Assemblies from two locations on each side of the skidtube as shown in Figure 3.
- 4.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 4.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 4.4 Countersink 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 4.5 Repeat steps 4.2 to 4.4 for the opposite side of the skidtube.
- 4.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 4.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.



5.0 D119-646-213/-214/-243 FLOAT SKIDTUBE MODIFICATION:

The following instructions are for modifying the D119-646-213/-214/-243 Float Skidtube to allow for D119-646-313/-314 Skidtube Protector Kit installation:

- 5.1 Temporarily remove D3849-045 Training Wearplate from aft end of the skidtube per ICA-D119-646 Section 32.
- 5.2 Position D5376-1 drilling jig tool with the arrow pointing fwd as shown in Figure 3. Use 2x AN3-45A bolts to hold the jig in place. Transfer drill 4x $\varnothing 0.129$ " (#30 drill) holes from D5376-1 drilling jig to skidtube ridge as shown in Figure 3. **Caution:** Drill perpendicular to the skidtube ridge.
- 5.3 Remove drilling jig. Using a 5/16" drill, open up the pilot holes and drill through the skidtube ridge and center web inside of the skidtube. **Caution:** Drill perpendicular to the skidtube ridge.
- 5.4 Countersink 4x 5/16" holes to $\varnothing 0.348$ " (8.84mm) x 100° as shown in Figure 3 and deburr.
- 5.5 Repeat steps 5.2 to 5.4 for the opposite side of the skidtube.
- 5.6 Vacuum the debris from inside of the skidtube. Touch up affected area using (Alodine 1200 or 1201) per MIL-DTL-5541.
- 5.7 Install 8x D5374-3 Bushings in the new holes. Seal bushings with Sikaflex-241/-291 or Proseal 890 or MIL-S-8802 Class 'B2' sealant as shown in Section C-C.

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	VS	EUGENE, OR	
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 3 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

6.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-011/-012/-041/-111/-112/-141:

- 6.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 6.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-011/-012/-041/-111/-112/-141 Skidtube at CHG 005 and subsequent, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 6.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.7 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.8 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-47A bolts, 6x D5374-1 Bushings, 6x D4506-3 Washers, 12x NAS1149D0332J washers, 6x MS21042L3 nuts as shown in Figure 1 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 6.9 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	VS	EUGENE, OR	
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 4 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

7.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-211/-212/-241:

- 7.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 7.2 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-211/-212 Skidtube at CHG 006 and subsequent, and D119-646-241 Skidtube at CHG 005 and subsequent, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 7.3 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.4 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.5 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.6 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.7 Reinstall the D3849-043 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 7.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 6x AN3-50A bolts, 6x D5374-1 Bushings, 6x D3904-1 Washers, 6x MS21042L3 nuts as shown in Figure 2 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 7.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 5 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

△ 8.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-013/-014/-043/-113/-114/-143:

- 8.1 Remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs.
- 8.2 Trim the D5369-1/-2 Cable Guard per Figure 7.
- 8.3 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-013/-014/-043/-113/-114/-143 Float Skidtube, Install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 8.4 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.5 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.6 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.7 If the D119-646-313 Skidtube Protector Kit is required for rappelling operations on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.8 Install D5369-2 Cable Guard on the RH side of the aircraft using 2x AN3-47A bolts, 2x D5374-1 Bushings, 2x D4506-3 Washers, 4x NAS1149D0332J washers, 2x MS21042L3 nuts as shown in Figure 7 Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.9 Install D5369-1 Cable Guard on the LH side of the aircraft using 2x AN3-47A bolts, 2x D5374-1 Bushings, 2x D4506-3 Washers, 4x NAS1149D0332J washers, 2x MS21042L3 nuts as shown in Figure 7, Section A-A. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 8.10 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 6 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

9.0 INSTALLATION OF D119-646-313/-314 ONTO D119-646-213/-214/-243:

- 9.1 Remove and discard all hardware attaching the training wearplates in front of the skidtube ground handling lugs.
- 9.2 Trim the D5369-1/-2 Cable Guard per Figure 8.
- 9.3 For installation of the D119-646-313/-314 Skidtube Protector Kit onto the D119-646-213/-214/-243 Float Skidtube, remove all D3492-045 Plug Assemblies from skidtube fwd of the ground handling wheel lugs & install NAS1149D0316J and NAS1149D0332J washers as shown in Detail G, Figure 6.
- 9.4 If the D119-646-314 Skidtube Protector Kit is required for hoisting operations on the RH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.5 If the D119-646-313 Skidtube Protector Kit is required for hoisting operations on the LH side of the aircraft install D5372-1 Plug using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 4 Detail E. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.6 If the D119-646-314 Skidtube Protector Kit is required for rappelling operations on the RH side of the aircraft install D5371-2 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.7 If the D119-646-313 Skidtube Protector Kit is required for rappelling operation on the LH side of the aircraft install D5371-1 Hook using 4x AN3-45A bolts, 8x NAS1149D0332J washer and 4x MS21042L3 nuts as shown in Section C-C and Figure 5 Detail F. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.8 Reinstall the D3849-045 Training Wearplate on the aft end of the skidtube per ICA-D119-646 Section 32, except for hardware under D5369-1/-2 Cable Guard.
- 9.9 Install D5369-2 Cable Guard on the RH side of the aircraft using 2x AN3-50A bolts, 2x D5374-1 Bushings, 2x D3904-1 Washers, 2x MS21042L3 nuts as shown in Figure 8 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.10 Install D5369-1 Cable Guard on the LH side of the aircraft using 2x AN3-50A bolts, 2x D5374-1 Bushings, 2x D3904-1 Washers, 2x MS21042L3 nuts as shown in Figure 8 Section B-B. Torque bolts to 15-25 in-lbs (1.7-2.8 N-m).
- 9.11 Update aircraft log book to indicate installation of the D119-646-313/-314 kit and adjust weight and balance record for the aircraft with weight and balance data provided in Section 11.0 of this document.

NOTE: Additional NAS1149D0332J washers may be installed under the nuts to ensure 1.5 - 4 threads in safety on the bolts. Although not generally necessary, it is also acceptable to replace the AN3 bolts provided with longer or shorter AN3 bolts, if required.

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 7 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

10.0 PARTS LIST:

Qty. -313	Qty. -314	PART NUMBER	DESCRIPTION
X		D119-646-313	SKIDTUBE PROTECTOR, LH
	X	D119-646-314	SKIDTUBE PROTECTOR, RH
6	6	D3904-1	WASHER
6	6	D4506-3	WASHER
1		D5369-1	CABLE GUARD, LH
	1	D5369-2	CABLE GUARD, RH
1		D5371-1	HOOK, LH
	1	D5371-2	HOOK, RH
1	1	D5372-1	PLUG
6	6	D5374-1	BUSHING
8	8	D5374-3	BUSHING
1	1	D5376-1	DRILLING JIG
4	4	AN3-45A	BOLT
6	6	AN3-47A	BOLT
6	6	AN3-50A	BOLT
18	18	NAS1149D0332J	WASHER
4	4	NAS1149D0316J	WASHER
10	10	MS21042L3	NUT

11.0 WEIGHT AND BALANCE

The following weight and balance changes are applicable:

Installation	Weight	LONGITUDINAL		LATERAL	
		Arm	Moment	Arm	Moment
D119-646-313 SKIDTUBE PROTECTOR, LH ON STANDARD SKIDTUBE	4.3 lb 1.95 kg	108.1 in 4.3 m	465 in-lb 8.4 kg-m	-43.4 in 1.7 m	-187 in-lb -3.3 kg-m
D119-646-314 SKIDTUBE PROTECTOR, RH ON STANDARD SKIDTUBE	4.3 lb 1.95 kg	108.1 in 4.30 m	465 in-lb 8.4 kg-m	43.4 in 1.7 m	187 in-lb 3.3 kg-m
D119-646-313 SKIDTUBE PROTECTOR, LH ON FLOAT SKIDTUBE	1.6 lb 0.72 kg	133.3 in 3.38 m	213 in-lb 2.4 kg-m	-43.4 in -1.7 in	69 in-lb 1.2 kg-in
D119-646-314 SKIDTUBE PROTECTOR, RH ON FLOAT SKIDTUBE	1.6 lb 0.72 kg	133.3 in 3.38 m	213 in-lb 2.4 kg-m	43.4 in 1.7 in	69 in-lb 1.2 kg-in



APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 8 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

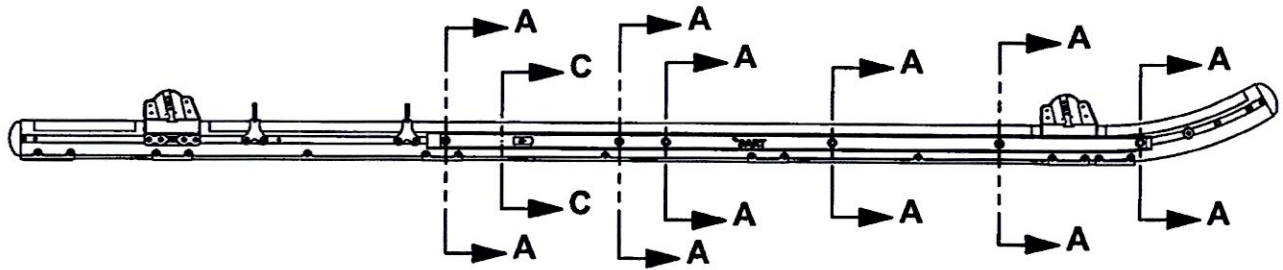


FIGURE 1: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-011/-012/-111/-112 SKIDTUBES)

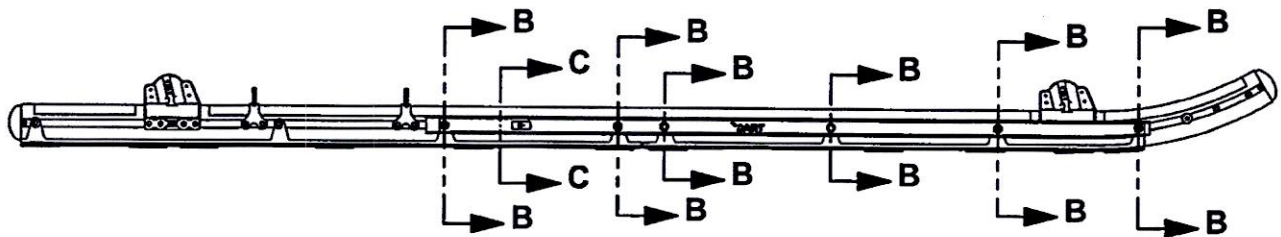


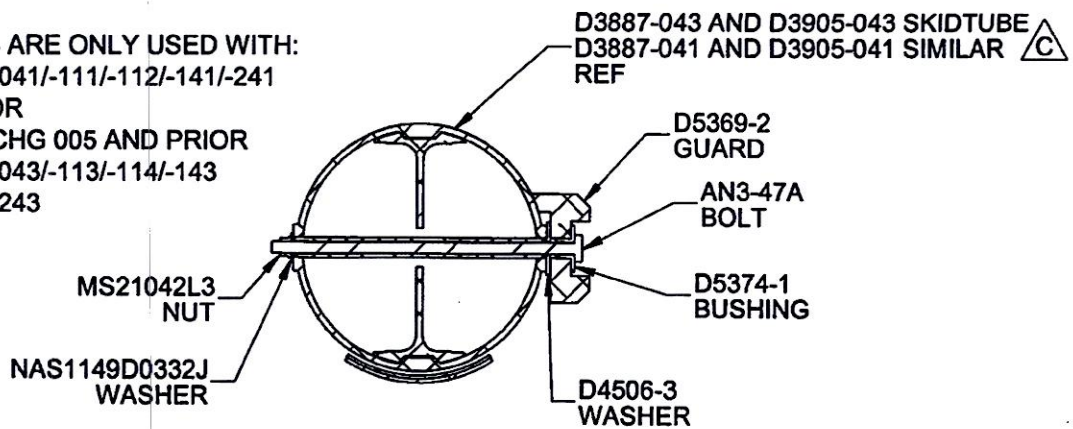
FIGURE 2: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-211/-212 SKIDTUBES)

APPROVED

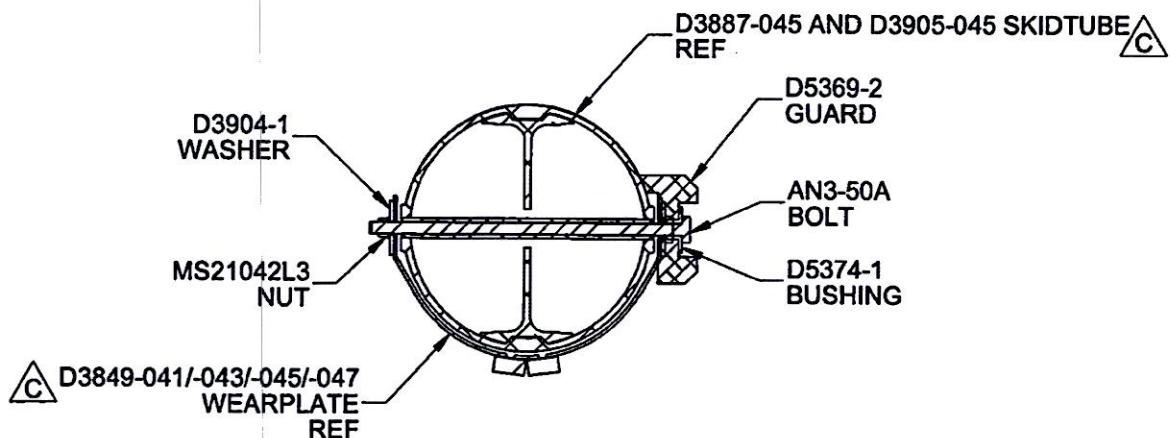
DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 9 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

NOTES:

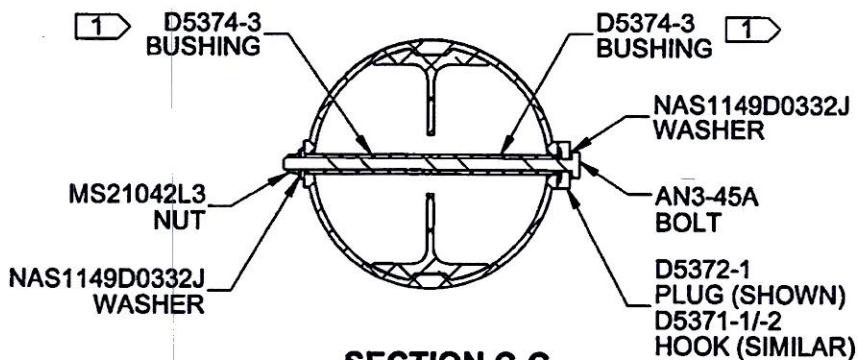
- 1) D5374-3 BUSHINGS ARE ONLY USED WITH:
 - D119-646-011/-012/-041/-111/-112/-141/-241
 CHG 004 AND PRIOR
 - D119-646-211/-212 CHG 005 AND PRIOR
 - D119-646-013/-014/-043/-113/-114/-143
 (C) D119-646-213/-214/-243



SECTION A-A



SECTION B-B

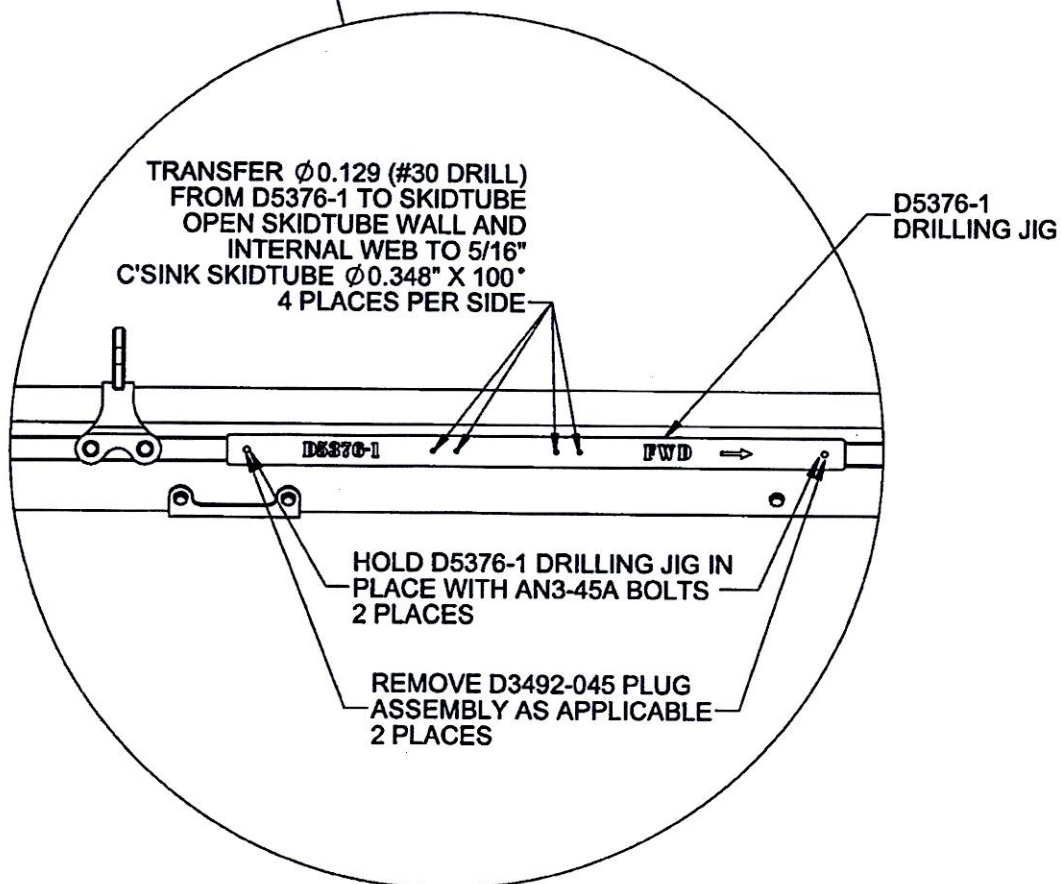
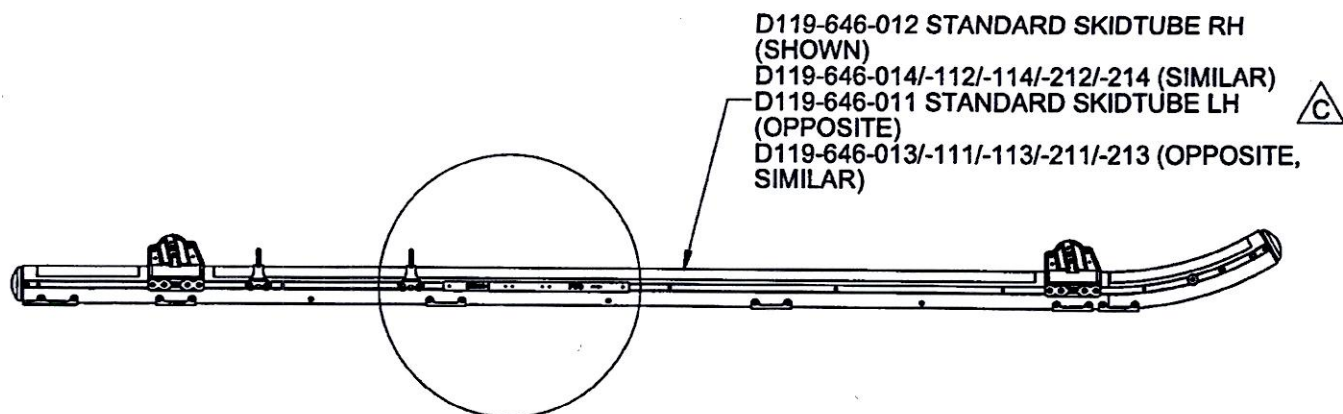


SECTION C-C

(D5369-2 NOT SHOWN FOR CLARITY)

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 10 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



DETAIL D

FIGURE 3: USING D5376-1 DRILLING JIG

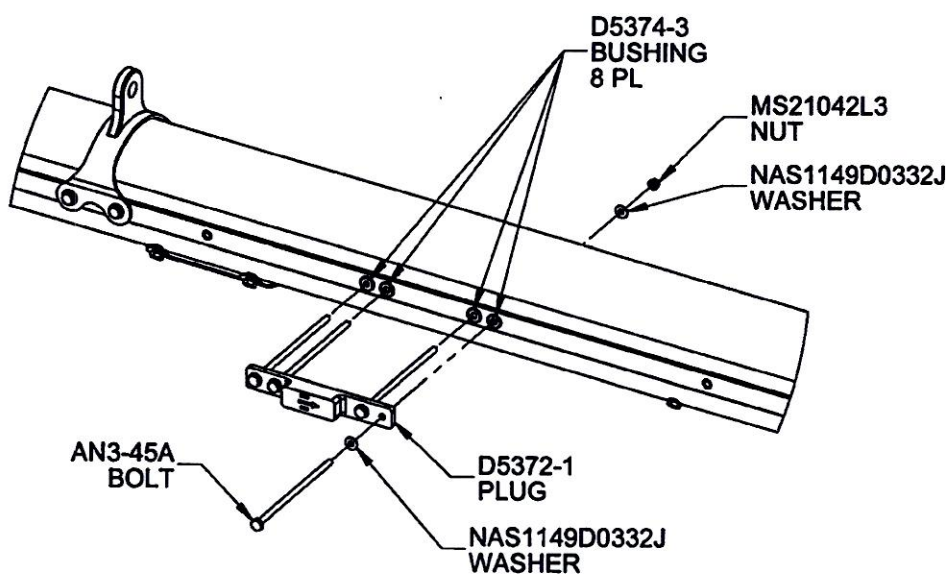
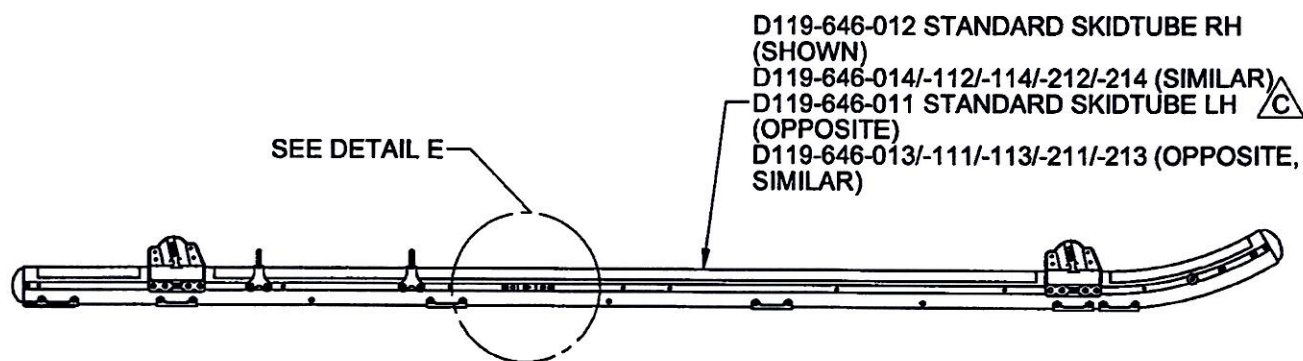
D5376-1 DRILLING JIG IS ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR
- D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 FLOAT SKIDTUBES



APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 11 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



DETAIL E

FIGURE 4: D5372-1 PLUG INSTALLATION

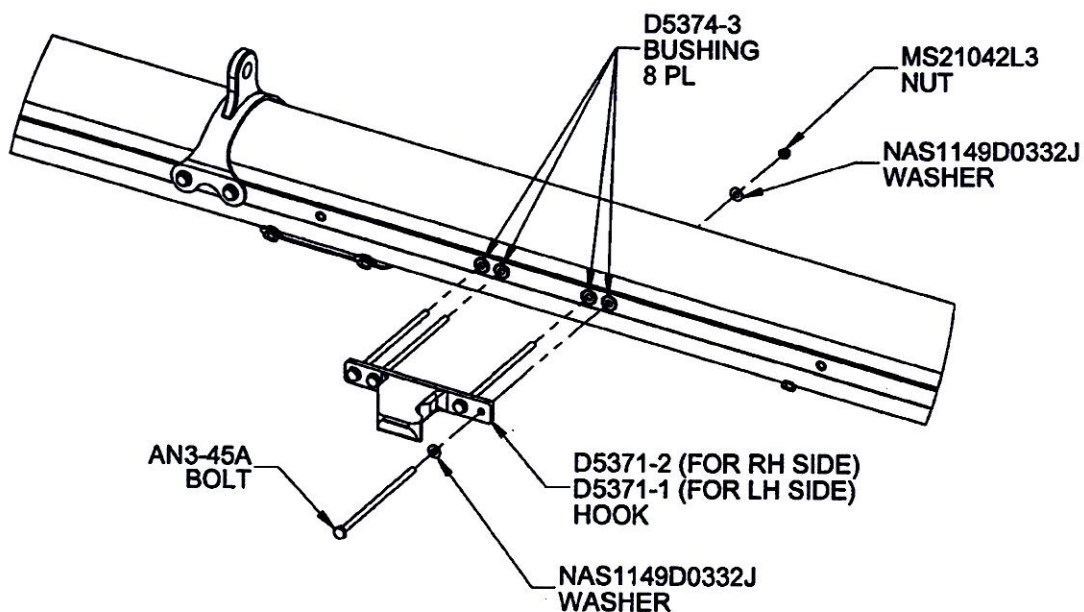
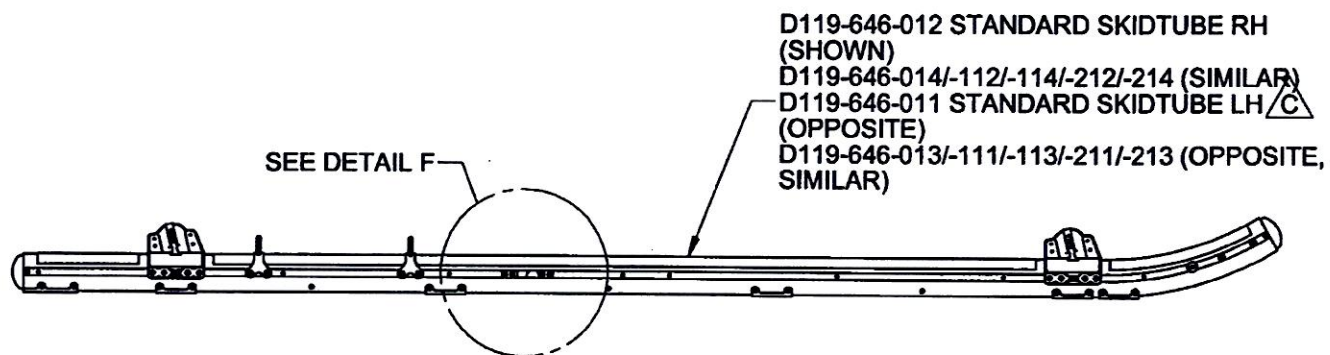
D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR
- D119-646-211/-212 CHG 005 AND PRIOR
- D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 FLOAT SKIDTUBES



APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 12 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	



DETAIL F

FIGURE 5: D5371-1/-2 HOOK INSTALLATION

D5374-3 BUSHINGS ARE ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 004 AND PRIOR

- D119-646-211/-212 CHG 005 AND PRIOR



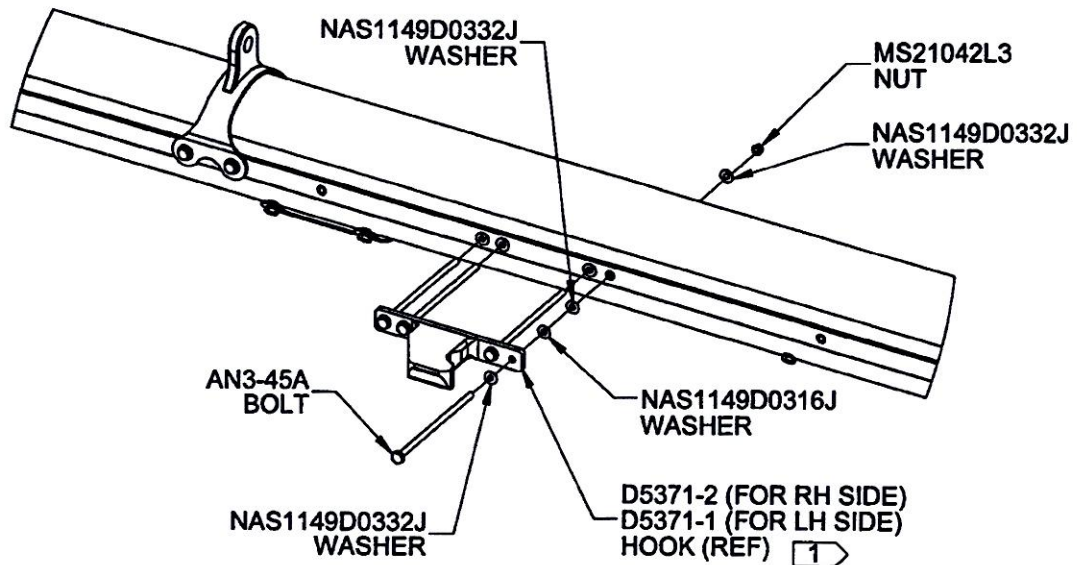
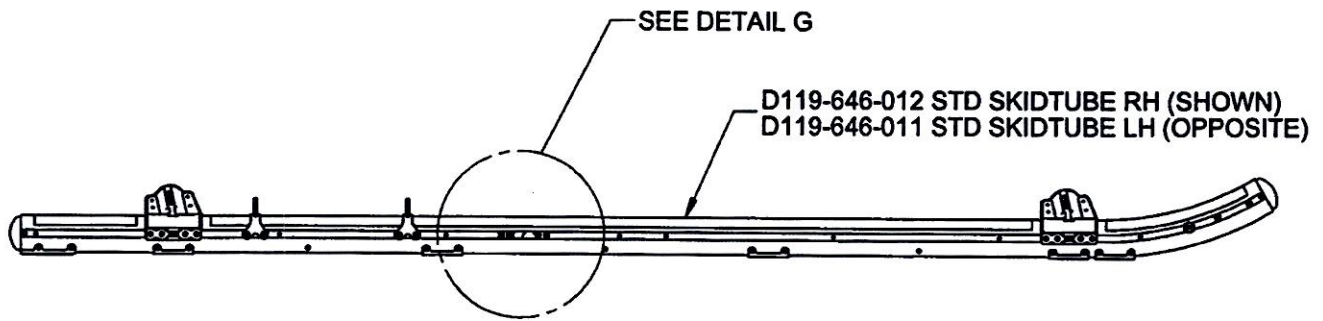
- D119-646-013/-014/-043/-113/-114/-143/-213/-214/-243 FLOAT SKIDTUBES

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 13 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

NOTES:

1) D5371-1/2 HOOK ASSEMBLY SHOWN, D5372-1 PLUG ASSEMBLY SIMILAR.

**DETAIL G****FIGURE 6: HOOK & PLUG INSTALLATION**

NAS1149D0316J and NAS1149D0332J WASHER BUILDUP IS ONLY USED WITH SKIDTUBE ASSEMBLIES:

- D119-646-011/-012/-041/-111/-112/-141/-241 CHG 005 AND SUBSEQUENT
- D119-646-211/-212 CHG 006 AND SUBSEQUENT

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC.	
DRAWN	VS	EUGENE, OR	
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 14 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC.	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.			

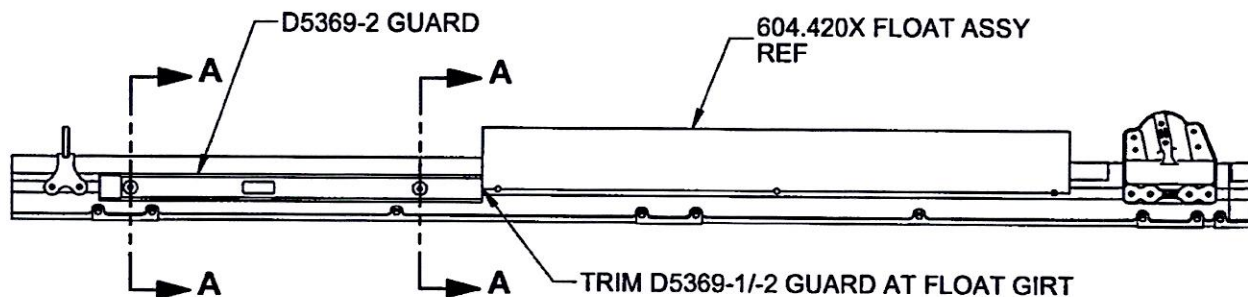


FIGURE 7: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-013/-014/-113/-114 SKIDTUBES)

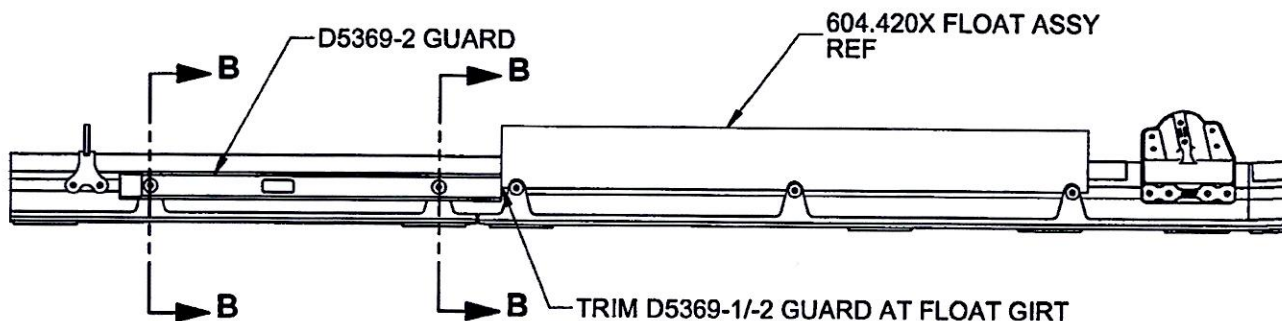


FIGURE 8: D119-646-314 SKIDTUBE PROTECTOR KIT, RH (SHOWN)
 (D119-646-313 SKIDTUBE PROTECTOR, LH (OPPOSITE))
 (SHOWN INSTALLED ON D119-646-213/-214 SKIDTUBES)

APPROVED

DESIGN	RF	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	VS		
CHECKED	MB	DRAWING NO.	REV. C
MFG. APPR.	N/A	DSI 9734	SHEET 15 OF 15
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	SKIDTUBE PROTECTOR KIT	NTS
DATE	17.06.27	COPYRIGHT © 2015 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	